

CLAIMS

1. A semiconductor device comprising a plurality of ICs including at least an input-stage IC and an output-stage IC, and signal transmission paths that connect each two of said plurality of ICs to achieve impedance matching therebetween, characterized in
5 that:

an input impedance of said input-stage IC and an output impedance of said output-stage IC are equal to a first impedance; and

each of at least two of said plurality of ICs is impedance-
10 matched to a corresponding one of said signal transmission paths at a matching impedance which is higher than said first impedance.

2. A semiconductor device comprising a plurality of ICs including at least an input-stage IC and an output-stage IC, and signal transmission paths that connect each adjacent two of said plurality of ICs to achieve impedance matching therebetween,
5 characterized in that:

an input impedance of said input-stage IC and an output impedance of said output-stage IC are first impedance and second impedance, respectively;

each of at least two of said plurality of ICs is impedance
10 matched to a corresponding one of said signal transmission paths at a matching impedance higher than a lower one of said first and

second impedances.

3. The semiconductor device according to claim 1 or 2, wherein said plurality of ICs are mounted on a common mounting substrate/board.

4. The semiconductor device according to claim 1 or 2, wherein said plurality of ICs include a plurality of IC groups, each of which is mounted on a common mounting substrate/board.

5. The semiconductor device according to claim 1 or 2, wherein said matching impedance differs between two of said signal transmission paths.

6. The semiconductor device according to any one of claims 1 to 5, wherein at least one of said plurality of ICs has a resistance element for said impedance matching in said input circuit and/or said output circuit.

7. The semiconductor device according to claim 6, wherein said output circuit is a differential circuit.

8. The semiconductor device according to claim 6 or 7, wherein said input circuit is an emitter-follower circuit, and said resistance element is connected between a base and a ground, or between a

base and a power source.

9. The semiconductor device according to claim 6 or 7, wherein said input circuit is a source-follower circuit, and said resistance element is connected between a gate and a ground, or between a gate and a power source.

10. The semiconductor device according to any one of claims 1 to 9, wherein at least one of said ICs includes an ECL circuit.

11. The semiconductor device according to any one of claims 1 to 10, wherein at least one of said ICs is a bare chip.

12. The semiconductor device according to any one of claims 1 to 11, wherein at least one of an input circuit of said input-stage IC and an output circuit of said output-stage IC is connected to an external circuit through a coaxial cable.

13. The semiconductor device according to any one of claims 1 to 12, wherein a signal to be input to said input-stage IC has a transmission rate not less than 1 Gbps or a frequency not less than 800 MHz.

14. The semiconductor device according to any one of claims 1 to 13, wherein said matching impedance is not more than ten times

said first impedance.

15. The semiconductor device according to any one of claims 1 to 14, wherein said matching impedance is not less than double said first impedance.